DOCUMENT RESUME

ED 141 386 95 TM 006 317

AUTHOR Vollbrecht, Michele Touzeau, Comp.
TITLE Grade Equivalent Scores: An Annotated Bibliography.
INSTITUTION ERIC Clearinghouse on Tests, Measurement, and Evaluation, Princeton, N.J.
SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.
PUB DATE [77]
CONTRACT 400-75-0015
NOTE 19p.

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS *Annotated Bibliographies; *Grade Equivalent Scores; Instructional Program Divisions; Norm Referenced Tests; Norms; Performance

ABSTRACT

Resources in Education, the Current Index to Journals in Education, and Psychological Abstracts were computer searched in order to identify documents and journal articles which describe the derivation, use, and misuse of grade equivalent scores, those scores which reflect a student's performance in a test or battery of tests according to grade norms. Each of the 23 references is abstracted and a subject index is provided. (EVH)

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GRADE EQUIVALENT SCORES

AN ANNOTATED BIBLIOGRAPHY

Compiled by

Michele Touzeau Vollbrecht

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PREFACE

The Educational Resources Information Center (ERIC) is operated by the National Institute of Education of the United States Department of Health, Education, and Welfare. It is an information system dedicated to the improvement of education through the dissemination of conference proceedings, instructional programs, manuals, position papers, program descriptions, research and technical reports, literature reviews, and other types of material. ERIC aids school administrators, teachers, researchers, information specialists, professional organizations, students, and others in locating and using information which was previously unpublished or which would not be widely disseminated otherwise.

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Besides processing documents and journal articles, the Clearinghouse has another major function: information analysis and synthesis. The Clearinghouse prepares bibliographies, literature reviews, state-of-the-art papers, and other interpretive reports on topics in its area of interest.

ABOUT THE BIBLIOGRAPHY

This bibliography was compiled to provide access to research and discussions of the use and misuse of grade equivalent scores, i.e., those scores which reflect a person's achievement on a test or battery of tests according to grade norms. It is not limited to any educational level, nor is it confined to any specific curriculum area. Two data bases were searched by computer.

A computer search of the ERIC data base yielded documents announced in Resources in Education and journal articles indexed in Current Index to Journals in Education which covers over 700 education-related journals. Also searched by computer was Psychological Abstracts, an index providing summaries of literature in psychology and related disciplines. Over 800 journals, technical reports, monographs, and other scientific documents are regularly covered. All data fields in both data bases were searched for the terms, grade, equivalent and scores.

The ERIC data base was searched in January 1977. ERIC began collecting information for RIE in 1966 and for CIJE in 1969. At the time of the search, the data base was complete through December 1976. Psychological Abstracts was searched in January 1977, and the data base dates from 1967.

For ERIC documents (those with an ED number appearing at the end of the bibliographic citation) the following information is presented when available: Personal or corporate author, title, date of publication, number of pages, and ED number. These documents may be purchased in hard copy or in microfiche from the ERIC Document Reproduction Service (EDRS). Price information and an order form are appended. However, ERIC microfiche collections are available at approximately 590 locations throughout the country, and most of these collections are open to the public. If you

are unable to find a collection in your area, you may write ERIC/TM for a listing.

Journal articles (those entries appearing with an EJ number or otherwise identified as journals by the bibliographic citation) are not available from EDRS. However, most of these journals are readily available in college and university libraries as well as some large public libraries.

All entries are listed alphabetically by author and are numbered. An abstract, or in the case of most journal articles, a shorter annotation, is provided for each entry. A subject index consisting of ERIC descriptors and identifiers reflecting major emphasis is also provided. Numbers appearing in the index refer to entries.

1. Aleyideino, Samuel C. The Effects of Response Methods and Item Types upon Working Time Scores and Grade Equivalent Scores of Pupils Differing in Levels of Achievement. Dissertation Abstracts, Vol. 29, No. 6-A, 1968, pages 1774-1775.

   This study was conducted to investigate possible differential effects upon performance on an achievement test battery of two methods of marking responses to test items. One method involved the use of a separate answer sheet and the other the use of the test booklet for direct recording of responses. The complete battery of the Iowa Tests of Basic Skills was used. In addition to the grade-equivalent scores provided by this battery two other scores indicative of rate of work were obtained. One such score was based on the time required to reach a point about mid-way through the test and the other on the time required for the entire test. Contrary to expectation, performance as measured in terms of grade equivalent scores proved to be more affected by method of marking responses in the case of subtests comprised of time-consuming types of items. In general, pupils who marked responses directly on the booklet tended to make higher grade-equivalent scores than pupils using the separate answer sheet. The only subtests in which significant interaction effects between response methods and ability levels were observed with grade-equivalent scores as the criterion were the two arithmetic subtests. In both instances pupils at higher ability levels profited more from marking their responses directly on the test booklet.

2. Badal, Alden W. and Larsen, Edwin P. Measurement in Education: On Reporting Test Results to Community Groups. East Lansing, Michigan: National Council on Measurement in Education. Special Report, Vol. 1, No. 4, May 1970, 12 pages. ED 051 297. Available only from: National Council on Measurement in Education, Office of Evaluation Services, Michigan State University, East Lansing, Michigan 48823 ($0.50)

   The major elements of a test interpretation model which would assist school personnel in presenting standardized test information to the public are presented. The model is a prototype based upon the testing program used in the Oakland, California Public Schools. An outline and sequence of the test score presentation are suggested, including notes on important background concepts. A discussion of test scores as they reflect school needs, and a selection of questions frequently asked by parent and community groups are provided. Consideration is given to uses of test scores, questions in interpreting test results, types of tests given in schools, test norms on comparison groups, types of test scores, summary statistics, and suggested data for presentation. Statistical illustrations are provided.

3. Berends, Margery Lois. An Analysis of Error Patterns, Rates and Grade Equivalent Scores on Selected Reading Measures at Three Levels of Performance. Ann Arbor, Michigan: University Microfilms, 1971. 154 pages. ED 066 716. Available only from University Microfilms, Dissertation Copies, P.O. Box 1764, Ann Arbor, Michigan 48106 (Order No. 72-21.831, M. Film, $4.00; Xerography, $10.00)

   This study examined the reading grade equivalents, oral reading rates, and prevailing error patterns of fourth grade disabled readers on standardized oral reading tests to determine if there were significant differences in the results obtained among the various instruments. Errors made on the oral paragraphs/stories from the Durrell Analysis of Reading Difficulty, the Gates McKillop Reading Diagnostic Tests, and the Standard Reading

Inventory at each of the three levels of reading performance were analyzed. Comparisons of the resulting error patterns were made between tests and between levels of performance. Most differences in the mean grade equivalent scores were significant. Rates of reading differed significantly between the levels of performance and all but two between test comparisons were significant. Errors which decreased as the difficulty level increased were repetitions and corrections. Errors which decreased as the difficulty level increased included visual auditory, syllabic division, directional confusion, words aided, medial errors, and ending errors. The total vision perception category and omissions did not change in frequency as difficulty level increased. The agreement among the ranking errors by the three oral tests was highly significant.

4. Bergsten, Jane Williams. The Effects of Cluster Sampling in the Norming of Achievement Test Battery. February 1973. 8 pages. ED 074 128.

Using the grade equivalent composite scores on the Iowa Tests of Basic Skills of Iowa fourth grade public school pupils who took the tests in January 1970, a study was made to determine the relative precision with which an estimate could be made of the individual percentile norms from different types of cluster sample designs. Five scores ranging from the 14th to the 93rd percentiles were selected, and the proportions below these five scores became the proportions to be estimated. The variances of the estimates of these five proportions were computed for over 20 different sample designs: results from seven sample designs are presented Using the error variances that were computed for each of the seven sample designs, the ratio of the error variance based on a cluster sample to the error variance based on a simple random sample of pupils was determined.

5. Cooney, G.H. Standardization Procedures Involving Moderator Variables--Some Theoretical Considerations. Australian Journal of Education, Vol. 19, No. 1, March 1975, pages 50-63. EJ 122024.

Some theoretical issues relevant to grading and the transforming of test scores are considered in this paper; and a comparison is made of two methods of scaling which use moderator variables.

6. Davis, John E. Indiana State Council Reading Test Survey. International Reading Association; Indiana State Council, 1975. 6 pages. ED 112 382.

A questionnaire was designed to study the uses made of reading tests by classroom teachers in Indiana with at least one year of experience in their respective classrooms. Of the 185 questionnaires distributed by local reading councils, 51 questionnaires were returned. The teachers responding taught in grades one through seven. They reported using 37 different tests: 84 percent used a battery of tests accompanying a basal reading series; 139 percent used reading achievement tests (some teachers used more than one achievement test); 41 percent used diagnostic tests; and 10 percent reported using intelligence tests as reading tests. Some of the responses indicated that most teachers probably use the previous year's scores to determine level of reading material and group placement and that they interpret grade equivalent scores as representing reading ability. Grade equivalent scores were found to be the most commonly filed test information in cumulative folders.

7. Donlon, Thomas F. Whose Zoo? Fry's Orangoutang Score Revisited. Reading Teacher, Vol. 25, No. 1, October 1971, pages 7-10. EJ 044190.

   In response to Fry's article in the January 1971 Reading Teacher, "The Orangoutang Score," this article suggests that chance level scores should not be assumed to have arisen only from random processes and that there are methods for identifying a thoughtful, nonrandom performance.

8. Ellis, E.N. Survey of Achievement in Reading in Grade 3 of Vancouver Schools, October 26-30, 1970. Vancouver, British Columbia: Vancouver Board of School Trustees, April 1971. 6 pages. ED 058 261.

   A summary of the results of the Metropolitan Upper Primary Reading Test, Form B, which was administered to third grade pupils in Vancouver, is presented. Included are tables of local norms and comparisons of the results of earlier surveys. In general these pupils performed at levels six months above the publishers' grade equivalent norm in "Word Discrimination" and three months above the publishers' norm in "Reading Comprehension". These results are consistent with those of earler surveys of reading in the primary grades. Because of the large number of perfect scores, it was concluded that the tests were too easy for many pupils.

9. Ellis, E.N. Survey of Achievement in Reading in Grade 6 of Vancouver Schools, November 2-6, 1970. Vancouver, British Columbia: Vancouver Board of School Trustees, May 1971. 5 pages. ED 058262.

   Results of the Gates-MacGinitie Reading Test for sixth graders are summarized. Tables include information for each subtest concerning mean scores, percentile ranks, grade equivalent scores, and standard scores. The level of achievement in this survey was lower than that of previous surveys.

10. Fennessey, James. Using Achievement Growth to Analyze Educational Programs. Work Unit 2A. Reward Structures - Achievement Growth. Baltimore, Maryland: Johns Hopkins University, Center for the Study of Social Organization of Schools, March 1973. 39 pages. ED 084 306.

    The single most important output of any school is probably the magnitude of its students' growth in academic achievement. A variety of standardized tests has been developed to measure aspects of this achievement; however, only recently have administrators attempted to use such tests to help review and make decisions about educational programs. There have been such applications of achievement tests recently, as well as associated problems. One often unrecognized problem is that for these program analysis applications, it is necessary to develop a score format appropriate to the decision context, and one which has the properties of an interval scale. There have been some difficulties inherent in past attempts to develop internal scales of academic achievement; these difficulties carry several implications. With a more open-minded and pragmatic approach research and development work on some of these issues can be done rather easily and inexpensively.

11. Hathaway, Walter E. The Appropriate and Inappropriate Uses of Grade Level Equivalents in School Evaluation. April 1975. 13 pages. ED 109 246. Hard copy not available from EDRS.

The Portland Board of Education had requested that the Oregon Central Evaluation Department provide student achievement data so as to allow comparisons with other school districts by reporting national grade level equivalent (GLE) scores on standardized tests of reading and mathematics for grades 4 and 8. For years, the position of most research and evaluation personnel in Portland's district has been that national GLEs are an inadequate and misleading type of score for representing student achievement in the district. This position has been based on information about the discrepant meaning of GLEs from test to test and also upon certain technical characteristics of these scores that might make them unsuitable for research and evaluation purposes. This paper discusses the advantages, disadvantages, differences in variations, interpretations, interpolations and alternatives to reporting GLEs and other standardized scores.

12. Hieronymus, A. N. and Stroud, James B. Comparability of IQ Scores on Five Widely Used Intelligence Tests. Measurement and Evaluation in Guidance, Vol. 2, No. 3, 1969, pages 135-140.

Data were gathered from 41 Iowa schools systems with 1655 pupils in Grade 4, 1637 in Grade 7, and 1665 in Grade 10. Each of the pupils took the Lorge-Thorndike Intelligence Tests and 1 other test, either the CTMM, the Henmon-Nelson Test of Mental Ability, the Kuhlmann-Anderson Intelligence Tests, or the Otis Quick-Scoring Mental Ability Test. Statistical comparability of verbal and nonverbal scores were analyzed. Correlations were well below equivalent-forms reliability coefficients, which indicate that the various tests are measuring somewhat different traits. Differences in comparable IQs vary from test to test, from grade to grade, and with IQ level.

13. Horst, Donald P. and Tallmadge, G. Kasten. A Procedural Guide for Validating Achievement Gains in Educational Projects. Monograph Series on Evaluation in Education, No. 2. Los Altos, California: RMC Research Corporation, 1976. 103 pages. ED 126 135. For related documents, see ED 096 344 and ED 104 918. Also available from: Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 ($2.10)

The orientation of this report is that of identifying educational projects which can be considered clearly exemplary. The largest section consists of a 22-step procedure for validating the effectiveness of educational projects using existing evaluation data. It is not intended as a guide for conducting evaluations but rather for interpreting data assembled by others using a wide variety of experimental and quasi-experimental designs. As such, its coverage is not restricted to "good" designs. It encompasses all of the commonly employed evaluation models, but is not so much concerned with assessing the relative usefulness of various designs as with the deficiencies and hazards inherent in each of them. It also offers suggestions for correcting those results when certain measurement or analysis principles have been violated. Included as appendices are a discussion of the issues surrounding use of criterion-versus norm-referenced tests, description of the logic and mathematical structures of certain regression

models, and an overview of the hazards associated with the use of percentiles and grade equivalent scores to describe academic performance.

14. Jensema, Carl J. A Note on the Achievement Test Scores of Multiple Handicapped Hearing Impaired Students. American Annals of the Deaf, Vol. 120, No. 1, February 1975, pages 37-39.

    Examined Stanford Achievement Test grade equivalent scores of 16,822 hearing-impaired students in a nationwide program testing 19,000 students. 11 subgroups were formed, each subgroup consisting of students reported as having 1 of 11 additional handicapping conditions. Mean grade equivalents were calculated for each subgroup to demonstrate, as a reminder, that each specific kind of additional handicap tends to exert a unique degree of influence on academic achievement.

15. Larsen, Edwin P. Opening Institutional Ledger Books--A Challenge to Educational Leadership: Suggestions for Talking to School-Community Groups About Testing and Test Results. TM Report No. 28. Princeton, New Jersey: ERIC Clearinghouse on Tests, Measurement and Evaluation, December 1974.13 pages ED 099 425.

    Three key areas are outlined dealing with the development of public understanding of testing: (1) Why tests are administered in schools: needs assessment, instructional program evaluation, materials selection, reporting to public, documenting individual growth, diagnostic analysis and planning, and instructional grouping. (2) Types of tests used, featuring explanations of achievement tests, Scholastic Aptitude Tests, interest tests, specialized aptitude tests, and personality tests. (3) Interpretation of test norms, raw scores, grade equivalent scores, percentile ranks and stanines, I.Q. scores, and summarizing results (medians and quartiles). Methods used to chart test results of a school or district are discussed and suggestions made for the basic tools needed, the need for minimum use of numbers, and the facility of percentile ranks. Tables and charts are presenting statistical information are proposed, and suggestions include highlighting specific skills, comparing aptitude and achievement, and charting growth from grade to grade. Finally, in discussing results and school accountability, the following are proposed: assume leadership--an advocacy position in identifying discrepancies in pupil performance (needs), relate results to instructional efforts, discuss resource needs of the district and school, outline noninstructional problems the school and community must address, and approximate accountability.

16. McElroy, Arthur A. Comparison of Grade Equivalent Scores Among Batteries on Two Subtests of the Metropolitan Achievement Test with Educable Mentally Retarded Children. Dissertation Abstracts International, Vol. 30, No. 11-A, May 1970, pages 4688-4689.

    The purpose of this study was to investigate the stability of the grade equivalent scores among batteries of the Metropolitan Achievement Tests when administered to retarded children. It had been indicated that any differences between batteries would be due to differences in the student's abilities rather than in the tests. This led to the hypotheses of no significant differences between the test batteries. The study used a

single-factor repeated measures design. The dependent variable was the correct responses converted to grade equivalent scores. The independent variables were the two subtests from the three batteries. A computer program which performs an analysis of variance for a factorial design was used to analyze the data. Results upheld the hypothesis that there would be no significant differences between batteries on the Reading Subtest. The second hypothesis was partially rejected due to significant differences between the Primary II Battery and the other batteries on the Arithmetic Problem Solving and Concepts Subtest. There were no significant differences, however, between the Elementary and Intermediate Batteries on this subtest. These results tended to confirm the stability of the grade equivalent scores among the three batteries of the Metropolitan Achievement Tests. These results seem to suggest that the lower level battery indicated by the mental ages and estimated grade levels of the students would be the appropriate level to commence testing. The next higher battery would need to be administered only to those limited by a ceiling effect of the lower battery. Attention should be given to the Arithmetic Problem Solving and Concepts Subtest to insure correspondence between the content taught in the curriculum and the factors measured by the different batteries. With the lack of any significant differences between the Elementary Battery and the Intermediate Battery on either subtest, it would appear prudent to use the Intermediate Battery only when a ceiling is imposed by the lower battery.

17. Perry, Dallis. Interpreting Standardized Test Scores. St. Paul, Minnesota: Minnesota University, Student Counseling Bureau, 1971. 57 pages. ED 053 201.

Principles of test administration, test validity, and accuracy of measurement underlying interpretation of standardized test scores in educational administration, instruction, and guidance are presented. Types of norm-referenced score transformations, including percentiles, standard scores, and grade equivalents, and of criterion referenced scores, including content scales, predicted scores, and expectancies, are described; and their applications are illustrated. Special attention is given to multiscores tests and the representation of their scores as profiles and similarity indexes.

18. Ricks, James H. On Telling Parents About Test Results. New York City, New York: Psychological Corporation, December 1959. 4 pages. ED 079 386

Two principles and one verbal technique provide a sound basis for communicating to students and their parents the information obtained from testing: (1) parents have the right to know whatever the school knows about the abilities, performance and problems of their children; (2) the school has the obligation to see that it communicated understandable and usable knowledge; and (3) preface the analysis of test results with the phrase "you (or your son/daughter) score like people who..." Communicating test results meaningfully involves attention to content, language and audience. IQs should rarely be reported to students or their parents. Grade placement scores or standard scores are less likely to cause trouble, but they require careful explanation. Percentiles probably are the safest and most informative numbers to use provided it is made clear that they refer not to the percent of questions answered correctly but to the percent of people whose performance the student has equalled or surpassed and provided it is made clear who the people are with whom the student is being compared.

19. Stake, Robert E. Measuring What Learners Learn (With A Special Look At Performance Contracting). Urbana, Illinois: Illinois University, Center for Instructional Research and Curriculum Evaluation, 1971. 41 pages. ED 052 234

A discussion of performance contracting, defined as an agreement between a group offering instruction and a school needing the services, is presented. Four major hazards to direct measurement of specific learning are considered: poor statement of objectives; selection of the wrong tests; misinterpretation of test scores; and depersonalization of contemporary life. These and other problems such as human and testing error, valid criterion testing, and the question of when to test, are discussed in full. The relationship of these hazards of performance measurement to performance contracting, and to regular school programs, is presented.

20. Tallmadge, G. Kasten and Horst, Donald P. A Procedural Guide for Validating Achievement Gains in Educational Projects. Los Altos, California: RMC Research Corporation, May 1974. 89 pages. ED 096 344. For related documents, see ED 104 918 and ED 126 135.

The orientation of this report is that of identifying educational projects which can be considered truly exemplary. The bulk of the report consists of a 23-step procedure for validating the effectivness of educational programs using existing evaluation data. It is not intended as a guide for conducting evaluations but rather for interpreting data assembled by others using a wide variety of experimental and quasi-experimental designs. As such, it coverage is not restricted to "good" designs. It encompasses all of the commonly employed evaluation models. The report is concerned with deficiencies and hazards of various designs with emphasis on the weaker ones which, as it happens, are also the most feasible in real-world settings, the least costly, and the most commonly used. The appendixes contain project selection criteria worksheets, information regarding norm-referenced versus criterion-referenced tests, estimation of treatment effect from the performance of an initially superior comparison group, effects of noncomparable testing dates on experimental group versus norm group comparisons, and problems using grade-equivalent scores in evaluating educational gains.

21. Tallmadge, G. Kasten and Horst, Donald P. A Procedural Guide for Validating Achievement Gains in Educational Projects (Revised). Los Altos, California: RMC Research Corporation, December 1974. 100 pages. ED 104 918. For related documents, see ED 096 344 and ED 126 135.

The orientation of this report is that of identifying educational projects which can be considered truly exemplary. The bulk of the report consists of a 23-step procedure for validating the effectiveness of educational programs using existing evaluation data. It is not intended as a guide for conducting evaluations but rather for interpreting data assembled by others using a wide variety of experimental and quasi-experimental designs. As such, its coverage is not restricted to "good" designs. It encompasses all of the commonly employed evaluation models. The report is concerned with deficiencies and hazards of various designs with emphasis on the weaker ones which, as it happens, are also the most feasible in real-world settings, the least costly, and the most commonly used. The appendixes contain project selection criteria worksheets information regarding norm-referenced versus criterion-referenced tests, estimation of treatment effect from the performance of an initially superior comparison group, effects of noncomparable testing dates on experimental

group versus norm group comparisons, and problems using grade-equivalent scores in evaluating educational gains. Changes from the original version include the removal of material which dealt with project selection criteria unrelated to cognitive achievement benefits.

22. Tucker, Elizabeth Sulzby. Grade Level Expectations and Grade Level Scores in Reading Tests. 1975. 23 pages. ED 123 590.

Statistical methods and test writing for reading comprehension have been based on the assumption that certain reading tasks or levels are appropriate at one age level that would be too difficult at another. A clear-cut determination of grade levels for reading materials has, however, not been defined. Grade and age equivalent scores on silent reading tests, readability scores attached to children's reading matter, and reading grade expectancy scores are investigated in light of their usefulness. The history of the grade equivalent scores used in standardized tests and in readability scores can be perceived as reflecting a circular, or skyhook relationship between these scores and curricular material. A testing procedure consisting of items beginning at a basal level, where a student was convinced of his or her mastery, and continuing until a ceiling of error is reached can eliminate the inattention factor and the guess factor. In addition, such a system can preserve the efficiency of the group format and make test results more interpretable to the specialist, as well as more understandable to the child.

23. Wardrop, James L. Was New Century Teaching Students the Gates-MacGinitie Reading Tests? Urbana, Illinois: Illinois University, Center for Instructional Research and Curriculum Evaluation, 1971. 10 pages ED 055 067.

"Teaching the test" has been defined in terms of teaching those particular content knowledges or skills needed to answer the test items correctly Evidence of several sorts examined in this paper clearly indicates that New Century was teaching students in Providence, R.I., the Gates-MacGinitie Reading Test, which was used to assess their vocabulary achievement. The coincidence between vocabulary taught in the instructional package and the vocabulary required to respond correctly to test items on the Gates-MacGinitie was determined to be much greater than could be attributed to chance and the data showed that the teaching program needed be only moderately effective to improve substantially student gains in grade-equivalent scores in the test. On the basis of the analyses summarized in the paper, if the instructional materials are only 30 percent effective, scores should average nearly twice those which would normally be found.

24. Utsey, Jordan. Simulation In Reading. December 1966. 13 pages. ED 013 703

An attempt to improve the reliability, validity, and efficiency of all reading instruction by modifying certain dimensions of teacher behavior is reported. A survey in Oregon indicated that to determine the functional reading level of students, 74 percent of the teachers used grade equivalent scores from achievement tests, 24 percent used information from cumulative folders, and 30 percent used combinations. Materials were developed to give prospective teachers an opportunity to learn the marking code of the informal reading inventory, to practice, and to evaluate their skill.

A series of simulated instructional films and printed materials was devised. The process experienced by the teachers in three class periods is described. One hundred undergraduate students were studied to determine the efficiency of the material. The results indicated that teachers, after viewing simulated material, were 92 percent accurate in assessing functional reading level. After revision of the material, a second study was conducted with 50 subjects. The results indicated 94 percent accuracy. A discussion of transfer into actual classroom practice and references are included.

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